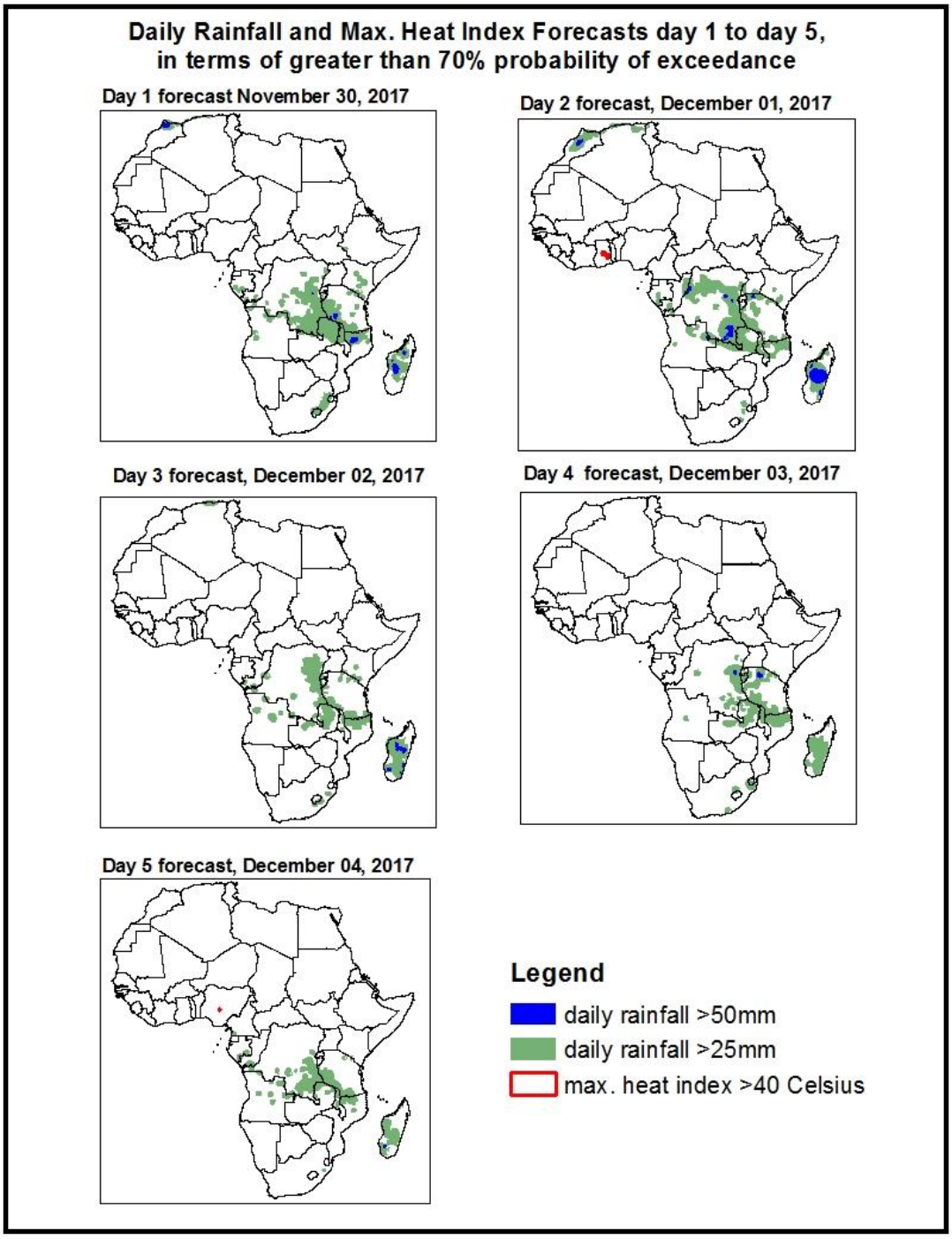
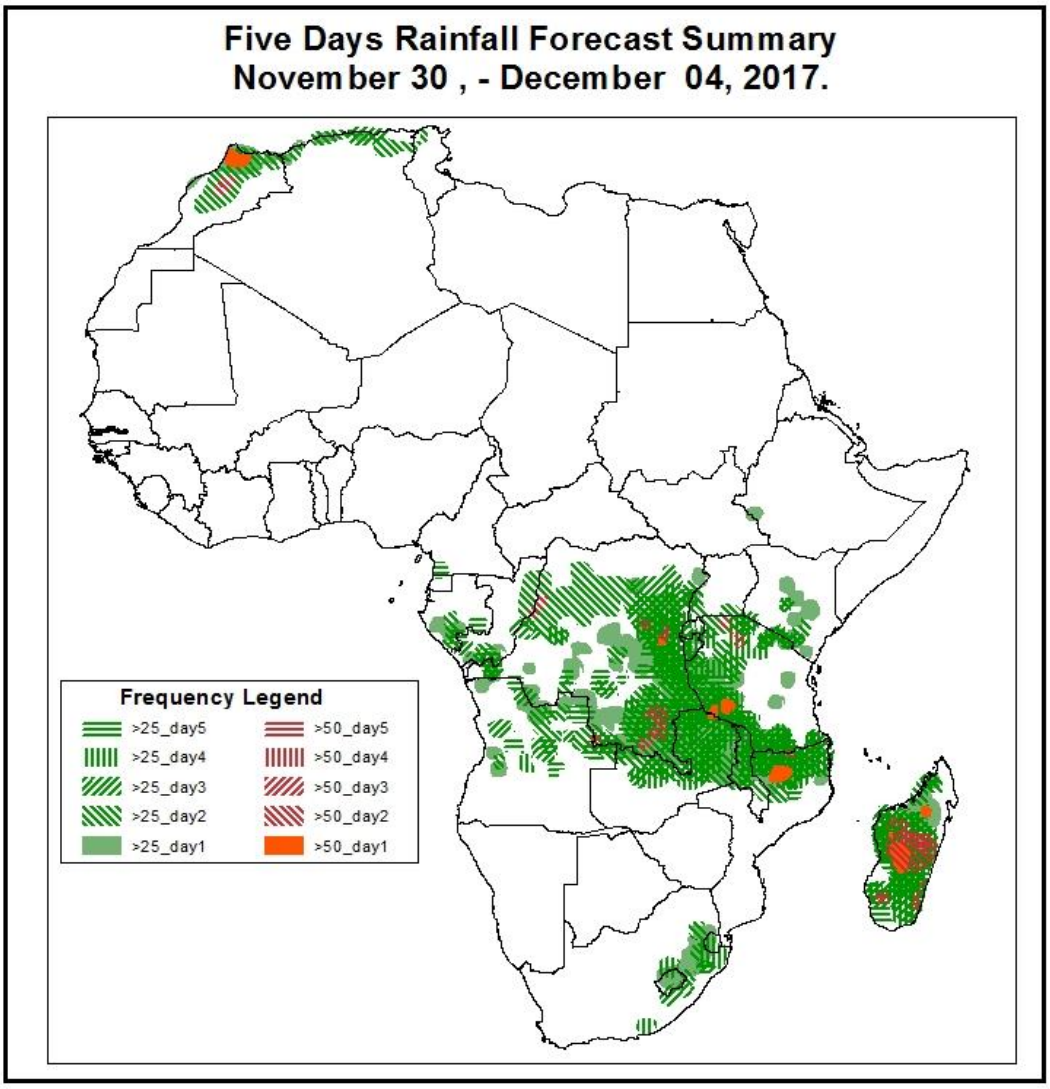
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on *Nov 29,* 2017)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (valid: Nov 30, –Dec 04, 2017)

The forecasts are expressed in terms of high probability of precipitation (POP) and high probability of maximum heat index, based on the NCEP/GFS, ECMWF and the NCEP Global Ensemble Forecasts System (GEFS) and expert assessment.





Highlights

In the next five days, active lower-level meridional convergence associated with the Congo air boundary (CAB) between the South Sudan to the southeast DRC and low level wind convergences in the equatorial Africa, parts of Angola and South Africa, are expected to enhance rainfall in the respective regions. As a result, there is an increased chance for two or more days of moderate to heavy rainfall over many places in Morocco, north Algeria, south Gabon, parts of Congo, DRC, south Kenya, Tanzania, south Uganda, Burundi, north Angola, part of Zambia, eastern South Africa, Malawi, north Mozambique and Madagascar.

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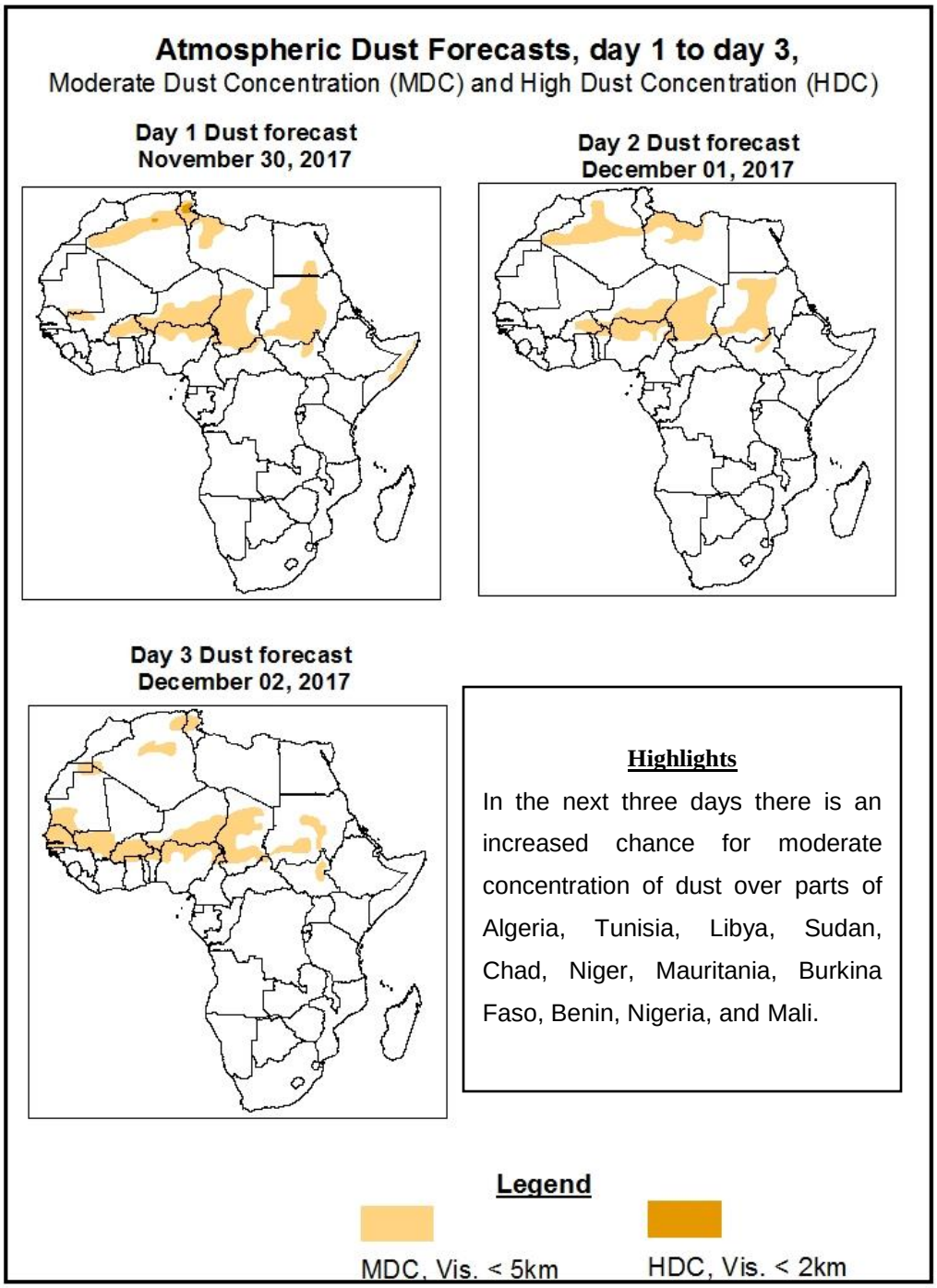
1.2. Atmospheric Dust Concentration Forecasts (valid: Nov 30, – Dec 02, 2017)

The forecasts are expressed in terms of high probability of dust concentration, based on the Navy Aerosol Analysis and Prediction System, NCEP/GFS lower-level wind forecasts and expert assessment.



1.3. Model Discussion, *Valid: Nov 30 – Dec 02, 2017*

The Azores High Pressure system over the North Atlantic Ocean is expected to intensify from its central pressure value of 1028hpa to 1035hpa towards the end of the forecast.

The St. Helena High Pressure system over the Southeast Atlantic Ocean is expected to weaken from its central pressure value of 1026hpa to 1023hpa and then intensify to 1025hpa towards the end of the forecast period.

The Mascarene High Pressure system over the Southwest Indian Ocean is expected to weaken from its central pressure value of 1024hpa to 1022hpa and then intensify to 1029hpa towards the end of the forecast period.

The heat low over western Sahel is expected to slightly deepen from its value of 1011hpa to 1009hpa and then fill up back to its value of 1011hpa towards the end of the forecast period.

The heat low over central Sahel is expected to slightly deepen from its value of 1012hpa to 1010hpa towards the end of the forecast period.

Over the Sudan area, the heat low is expected to deepen from its value of 1011hp to 1009hpa towards the end of the forecast period.

At 925hPa, West Africa is dominated by the continental winds with a convergence all through the region and vortex developing over the extreme western part and moving westward to the end of the forecast period. Over the Sudan area, there is a convergence which is dominated by the continental winds also with a vortex located over the South Sudan and moving westward towards the end of the forecast period.
Another strong convergence is established over the Central Africa Republic, Tanzania and the southern part of Africa which are quasi-stationary towards the end of the forecast period.

The dry north easterlies to easterly winds propagating from the subtropical high pressure system over North Africa sustained the spreading and transportation of the Saharan dust over Algeria, Libya, Egypt, Sudan, Chad, Niger, Mali and Mauritania.

At 850hPa, there is a convergence flow over West Africa with a low pressure system developing over the West Sahel which is dominated by the continental winds and is propagating westward to the end of the forecast period.
There is another strong convergence over the southeastern DRC which traverse and extends to western Tanzania, Burundi, Rwanda and then to Uganda and is quasi-stationary towards the end of the forecast period.

In the next five days, active lower-level meridional convergence associated with the Congo air boundary (CAB) between the South Sudan to the southeast DRC and low level wind convergences in the equatorial Africa, parts of Angola and South Africa, are expected to enhance rainfall in the respective regions. As a result, there is an increased chance for two or more days of moderate to heavy rainfall over many places in Morocco, north Algeria, south Gabon, parts of Congo, DRC, south Kenya, Tanzania, south Uganda, Burundi, north Angola, part of Zambia, eastern South Africa, Malawi, north Mozambique and Madagascar.

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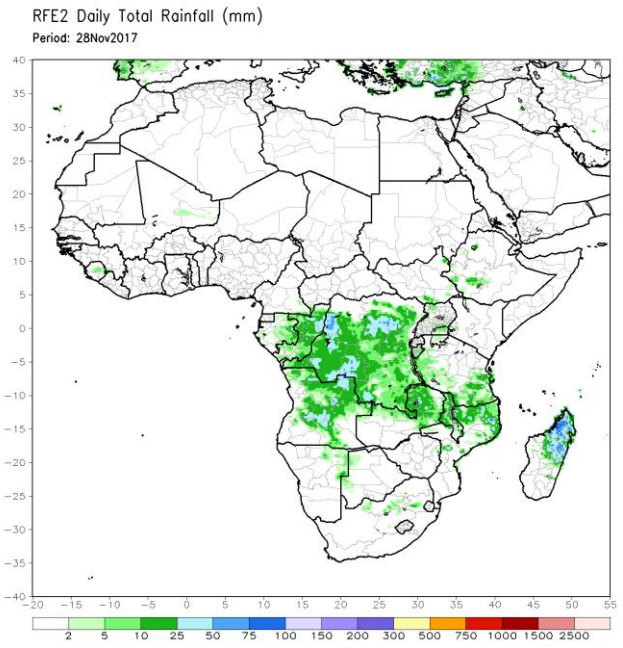
2.0. Previous and Current Day Weather over Africa

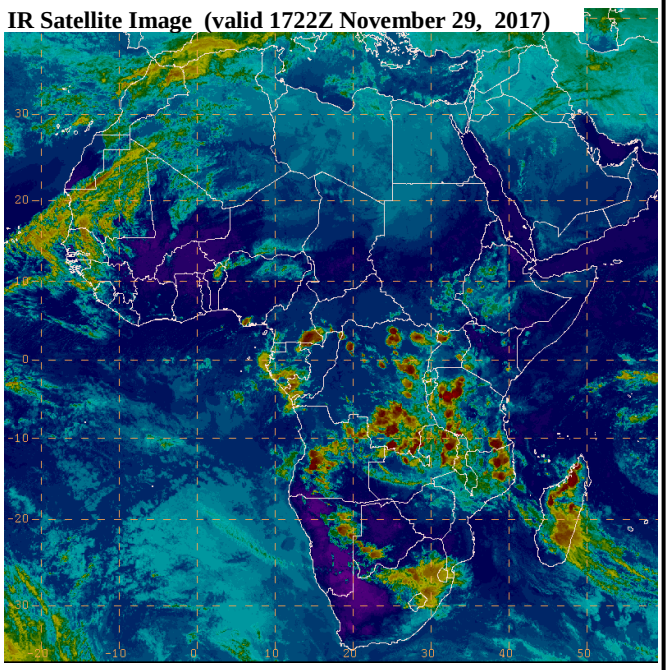
2.1. Weather assessment for the previous day (November 28, 2017)

Moderate to locally heavy rainfall was observed over eastern Gabon, Congo, DRC, Angola, Zambia, parts of Tanzania, Malawi, Mozambique, and Madagascar.

2.2. Weather assessment for the current day (November 29, 2017)

Intense convective clouds are observed over portions of West, Central and South Africa.





Previous day rainfall condition over Africa (Left) based on the NCEP CPCE/RFE and current day cloud cover (right) based on IR Satellite image.

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